

WHAT IS CLAIMED IS:

1. A service system comprising a computer having a function to calculate the charge for use of an apparatus for manufacturing products such as semiconductor wafer,
5 semiconductor device, exposure mask and liquid crystal device based on the result of the calculation of

$$\{X \times (a - b)Y\}^k \text{ (where, } b \text{ includes } 0)$$

wherein quantity expressed with the number of processed
10 sheets of product as the running information of the above apparatus is defined as X, product grade coefficient expressed with size accuracy, calibration tolerable value, alignment accuracy and position accuracy as the product grade information as a, apparatus condition coefficient expressed
15 with residue of various calibration and compensation, calibration condition parameter, calibration history, accumulated use time of limited-life parts, generated error information as the apparatus condition information as b, quality grade as $(a - b)Y$ and coefficient as k.

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2. A service system comprising a computer having a function to calculate the charge for use of an apparatus for manufacturing products such as semiconductor wafer,
semiconductor device, exposure mask and liquid crystal device
25 based on the result of the calculation of

$\{X \times (a - b)Y\}^k$ (where, b includes 0)

wherein quantity expressed with the number of processed sheets of product is defined as the running information of the above apparatus is defined as X , product
 5 grade coefficient expressed with size accuracy, calibration tolerable value eliminating the yield, alignment accuracy and position accuracy as the product grade information as a , apparatus condition coefficient expressed with residues of various calibration and compensation, calibration condition
 10 parameter, calibration history, accumulated use time of limited-life parts and generated error information as the apparatus condition information as b , quality grade as $(a - b)Y$, yield coefficient expressed for the yield as $Z (= 1 \pm \alpha$ (α is smaller than 1)) and coefficient as k .

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3. A service system according to claim 1 or 2, wherein b is defined as not zero.

4. A service system according to claim 1 or 2, wherein
 20 a database is provided to record the information about X , a , b , $(a - b)Y$ and k .

5. A service system according to claim 2, wherein a database is provided to record the information about x , a ,
 25 b , $(a - b)Y$, Z , k .

6. A service method for calculating the charge for use of an apparatus for manufacturing products such as semiconductor wafer, semiconductor device, exposure mask and liquid crystal device based on the result of the calculation of

$$\{X \times (a - b)Y\}^k \text{ (where, } b \text{ includes } 0)$$

wherein quantity expressed with the number of processed sheets of product as the running information of the above apparatus is defined as X, product grade coefficient expressed with the size accuracy, calibration tolerable value, alignment accuracy and position accuracy as the product grade information as a, apparatus condition coefficient expressed with residue of various calibration and compensation, calibration condition parameter, calibration history, accumulated use time of limited-life parts, and generated error information as the apparatus condition information as b, quality grade as $(a - b)Y$ and coefficient as k.

7. A service method for calculating the charge for use of an apparatus for manufacturing products such as semiconductor wafer, semiconductor device, exposure mask and liquid crystal device based on the result of the calculation of

$$\{X \times (a - b)Y\}^k \text{ (where, } b \text{ includes } 0)$$

wherein quantity expressed with the number of processed sheets of product as the running information of the apparatus is defined as X , product grade coefficient expressed with the size accuracy, calibration tolerable value eliminating yield, alignment accuracy and position accuracy as the grade information as a , apparatus condition coefficient expressed with residue of various calibration and compensation, calibration condition parameter, calibration history, accumulated use time of limited-life parts and generated error information as the apparatus condition information as b , quality grade as $(a - b)Y$, yield coefficient expressed for yield as Z ($= 1 \pm \alpha$ (α is smaller than 1)) and coefficient as k .

8. A service method according to claim 6 or 7, wherein b is defined as not zero.

9. A service method according to claim 6 or 7, wherein a database is used for storing the information about X , a , b , $(a - b)Y$, and k .

10. A service method according to claim 7, wherein a database is provided to record the information about X , a , b , $(a - b)Y$, Z and k .

11. A service method on the occasion of using a manufacturing apparatus for manufacturing products such as semiconductor wafer, semiconductor device, exposure mask or liquid crystal device, wherein inspection information of said products manufactured with said manufacturing apparatus is
5 obtained via a physical memory medium or an information communication network, operating conditions of said manufacturing apparatus are controlled based on said inspection information, running information of said manufacturing apparatus is obtained via the information
10 communication network and the charge for use of said manufacturing apparatus is determined based on said running information and inspection information.

12. A service method on the occasion of using an inspection apparatus for inspecting products such as semiconductor wafer, semiconductor device, exposure mask or liquid crystal device, wherein inspection information of said product inspected with said inspection apparatus is obtained
15 via a physical memory medium or an information communication network, operating conditions of said inspection apparatus are controlled based on said inspection apparatus, running information of said inspection apparatus is obtained via the information communication network and the charge for use of
20 said inspection apparatus is determined based on said running
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information and inspection apparatus.

13. A manufacturing/inspection apparatus for manufacturing or inspecting products such as semiconductor
5 wafer, semiconductor device, exposure mask or liquid crystal device comprises a memory device for storing at least any information pieces of the process information indicating the quantity of manufactured or inspected products, accuracy information indicating the manufacturing or inspection
10 accuracy of said products, running information indicating the running conditions of said manufacturing/inspection apparatus and calibration information indicating a calibration value required for apparatus running control at the time of manufacture or inspection of said
15 manufacturing/inspection apparatus.

14. A manufacturing/inspection apparatus according to claim 13, wherein said memory device is a memory medium that can be transported easily.
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15. A manufacturing/inspection apparatus according to claim 13, wherein a transmitting unit is provided to transmit the information stored in said memory device.

25 16. A manufacturing/inspection apparatus according to

claim 15, wherein said transmitting unit is connected to a wide area communication network.

17. A manufacturing/inspection apparatus according to
5 claim 15, wherein a charge for use of said manufacturing/inspection apparatus is set based on the information transmitted by said transmitting unit.

18. A manufacturing/inspection apparatus according to
10 claim 17, wherein a lower charge is set when the accuracy of said accuracy information is lower than the accuracy that may be implemented with said manufacturing/inspection apparatus.

15 19. A manufacturing/inspection apparatus according to claim 13, wherein a charge for use of said manufacturing/inspection apparatus is set based on the information stored in said memory device.

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20. A manufacturing/inspection apparatus according to claim 19, wherein a lower charge is set when the accuracy of said accuracy information is lower than the accuracy that may be implemented with said manufacturing/inspection
25 apparatus.

21. A service method wherein the charge for use of said manufacturing/inspection apparatus is set based on any information of at least the process information indicating
5 quantity of said products manufactured or inspected with said a manufacturing/inspection apparatus for manufacturing or inspecting products such as semiconductor wafer, semiconductor device, exposure mask or liquid crystal device, accuracy information indicating the accuracy of the
10 manufacture or inspection of said product, running information indicating the running condition of said manufacturing/inspection apparatus and calibration information indicating the calibration value required for apparatus running control at the time of manufacture of
15 inspection by said manufacturing/inspection apparatus.

22. A service method according to claim 21, wherein a lower charge is set when the accuracy of said accuracy information is lower than the accuracy that can be implemented
20 with said manufacturing/inspection apparatus.

23. A service method according to claim 21, wherein at least one of said processing information, accuracy information, running information and calibration
25 information is stored in an easily portable recording medium.

24. A service method according to claim 21, wherein
at least one of said processing information, accuracy
information, running information and calibration
5 information is transmitted by a transmitting unit.

25. A service method according to claim 24, wherein said
transmitting unit is connected with a wide area communication
network.

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26. A service method according to claim 25, wherein a
charge for use of apparatus is set based on the information
transmitted from said transmitting unit.

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27. A service method for utilizing a
manufacturing/inspection apparatus for manufacturing or
inspecting products such as semiconductor wafer,
semiconductor device, exposure mask or liquid crystal device,
wherein the charge for use of said manufacturing/inspection
20 apparatus is set based on manufacturing or inspection
difficulty information of said product manufactured or
inspected with said manufacturing/inspection apparatus and
running information of said manufacturing/inspection
apparatus stored in a physical memory medium.

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28. A manufacturing/inspection apparatus for manufacturing or inspecting products such as semiconductor wafer, semiconductor device, exposure mask or liquid crystal device, comprising a memory device for storing manufacturing or inspection difficulty information of said product
5 inspected with said manufacturing/inspection apparatus in a physical memory medium and a transmitting unit for transmitting the running information of said manufacturing/inspection apparatus.

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29. A service system for setting the charge for use of a manufacturing/inspection apparatus for manufacturing or inspecting products such as semiconductor wafer, semiconductor device, exposure mask or liquid crystal device,
15 comprising a read device for reading data of a physical memory medium storing the manufacturing or inspection difficulty information of said product manufactured or inspected with said manufacturing/inspection apparatus, a receiving unit for receiving the transmitted running information of said
20 manufacturing/inspection apparatus and an arithmetic device for setting the charge for use of said manufacturing/inspection apparatus based on said data of said physical memory medium and said running information.

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30. A service system according to claim 29, comprising

a transmitting unit or transmitting a charge preset by said arithmetic device.

31. A service system, comprising an apparatus control
5 computer for collecting apparatus running information of said
manufacturing/inspection apparatus such as the number of
sheets processed of products such as semiconductor wafer,
semiconductor device, exposure mask and liquid crystal device
manufactured or inspected with a manufacturing/inspection
10 apparatus, product grade information such as size accuracy,
calibration tolerance value, alignment accuracy and position
accuracy and apparatus condition information such as residue
of calibration, residue of compensation, calibration
condition and calibration history, a database for receiving
15 via a communication network and storing said collected
apparatus running information, product grade information and
apparatus condition information and a computer for
calculating the charge for use of said
manufacturing/inspection apparatus based on the information
20 stored in said database.

32. A service system, comprising an apparatus control
computer for collecting apparatus running information of said
manufacturing/inspection apparatus such as the number of
25 sheets processed of products such as semiconductor wafer,

semiconductor device, exposure mask and liquid crystal device
manufactured or inspected with a manufacturing/inspection
apparatus, product grade information such as size accuracy,
calibration tolerance value, alignment accuracy and position
5 accuracy and apparatus condition information such as residue
of calibration, residue of compensation, calibration
condition, calibration history and accumulated use time of
limited-life part, a database for receiving via a
communication network and storing said collected apparatus
10 running information, product grade information and apparatus
condition information and a computer for extracting
maintenance work required for said manufacturing/inspection
apparatus based on the information stored in said database.

15 33. A service system, comprising an apparatus control
computer for collecting apparatus running information of said
manufacturing/inspection apparatus such as the number of
sheets processed of products such as semiconductor wafer,
semiconductor device, exposure mask and liquid crystal device
20 manufactured or inspected with a manufacturing/inspection
apparatus, product grade information such as size accuracy,
calibration tolerance value, alignment accuracy or position
accuracy and apparatus condition information such as residue
of calibration, residue of compensation, calibration
25 condition, calibration history and generated error

information, a database for receiving via a communication network and storing said collected apparatus running information, product grade information and apparatus condition information and a computer for analyzing
5 discrepancy factors of said manufacturing/inspection apparatus based on the information stored in said database.

34. A service system, comprising an apparatus control computer for collecting an apparatus running information of
10 a manufacturing/inspection apparatus such as the number of sheets processed of products such as semiconductor wafer, semiconductor device, exposure mask and liquid crystal device manufactured or inspected with said
manufacturing/inspection apparatus, product grade
15 information such as size accuracy, calibration tolerance value, alignment accuracy and position accuracy and an apparatus condition information such as residue of calibration, residue of compensation, calibration condition, and calibration history, a database for receiving via a
20 communication network and storing said collected apparatus running information, product grade information and apparatus condition information and a computer for extracting tuning work required for said manufacturing/inspection apparatus based on the information stored in said database.

35. A service system according to claim 34, wherein said apparatus control computer is connected to the communication network via an exclusive server.

5 36. A service system according to claim 35, wherein said apparatus control computer transmits information to said exclusive server only via a physical medium.

10 37. A service system according to claim 35, wherein said physical medium can be loaded and unloaded to said exclusive server with a loading mechanism to be controlled with said apparatus control computer.

15 38. A service system according to claim 34, wherein the GUI display connected to said computer includes the information pieces of at least,

- (1) number of sheets of wafer or mask to be processed;
- (2) total number of shots per wafer or mask;
- (3) class of product grade specified with size accuracy,
- 20 position accuracy and alignment accuracy or the like;
- (4) apparatus condition information defined with various residues of calibration and compensation; and
- (5) display of charge for use of apparatus calculated from the above information or notification of
- 25 permission for use of an apparatus.

39. A service system according to claim 34, wherein the GUI display connected to said computer includes the information pieces of at least,

- 5 (1) number of sheets of wafer or mask to be processed,
- (2) total number of shots per wafer or mask,
- (3) class of apparatus grade specified by size accuracy, position accuracy and alignment accuracy or the like,
- (4) apparatus condition information defined from
- 10 various residues of calibration and compensation,
- (5) accumulated use time of limited-life part,
- (6) accuracy items of which deterioration is recognized with the calibration history,
- (7) generated error record and recovery condition,
- 15 (8) exchange timing of the limited-life part estimated from the accumulated use time information of limited-life part,
- (9) adjustment and calibration means for the control items of which deterioration is recognized, and
- 20 (10) apparatus discrepancy portion estimated from such error information.

40. A service system according to claim 34, wherein the GUI display connected to said computer includes the

25 information pieces of at least,

- (1) number of sheets of wafer or mask to be processed,
- (2) total number of shots per wafer or mask,
- (3) class of apparatus grade specified with size accuracy, position accuracy and alignment accuracy or the like,
- (4) apparatus condition information defined from various residues of calibration and compensation,
- (5) accuracy deteriorated portion estimated from the calibration history, and
- (6) adjustment requiring portion and adjusting method estimated from the above information pieces.